

WHAT IS CLAIMED IS:

1. An absorbent structure comprising a absorbent member at least partially made of fibers having first, second and third regions, a first stretchable reinforcing member located between the first region and the second region, and a
5 second stretchable reinforcing member located between the second region and the third region, said first and second stretchable reinforcing members for reinforcing the absorbent member to maintain the structural integrity of the absorbent member under loads experienced by the absorbent structure.

2. An absorbent structure as set forth in claim 1 wherein the reinforcing members are adapted to return substantially to an original dimension for elongation of the absorbent structure in a direction up to about 300% of its
5 relaxed length.

3. An absorbent structure as set forth in claim 1 wherein the reinforcing members are adapted to return substantially to an original dimension for elongation of the absorbent structure in a direction up to about 100% of its
5 relaxed length.

4. An absorbent structure as set forth in claim 1 wherein the absorbent structure is adapted to stretch.

5. An absorbent structure as set forth in claim 4 wherein the absorbent structure is elastic.

6. An absorbent structure as set forth in claim 4 wherein some fibers in each of said regions of the absorbent member are entangled with fibers from another of the regions, and other fibers in each of said regions are entangled with a
5 respective one of the reinforcing members.

7. An absorbent structure as set forth in claim 1 wherein the reinforcing members comprise strands arranged in a pattern in which at least some of the strands intersect one another at junctions to define openings in the reinforcing members.

8. An absorbent structure as set forth in claim 7 wherein the pattern of strands in the first reinforcing member is substantially the same as the pattern of strands in the second reinforcing member.

9. An absorbent structure as set forth in claim 7 wherein the second reinforcing member is offset from the first reinforcing member so that strands in the second reinforcing member are at least partially in registration with the openings in the first reinforcing member.

10. An absorbent structure as set forth in claim 7 wherein the absorbent member has a first axis extending generally lengthwise thereof and a second axis extending generally widthwise thereof, none of the strands extending parallel to the first or second axis of the absorbent member.

11. An absorbent structure as set forth in claim 7 wherein said reinforcing members comprise a first set of generally parallel strands and a second set of generally parallel strands that cross said first set of strands at right angles with the first set of strands.

12. An absorbent structure as set forth in claim 11 wherein the strands are joined to each other at least at some of the junctions.

13. An absorbent structure as set forth in claim 7

wherein said reinforcing members comprise a first set of generally parallel strands and a second set of strands that cross said first set of strands at non-orthogonal angles to the first set of strands.

14. An absorbent structure as set forth in claim 13 wherein said reinforcing members comprise a third set of strands that cross said first set of strands at non-orthogonal angles to the first set of strands and also cross said second set of strands.

15. An absorbent structure as set forth in claim 7 wherein the strands are arranged so that said openings are diamond shaped.

16. An absorbent structure as set forth in claim 7 wherein the reinforcing members are elastically stretchable, the absorbent member having rugosities formed therein by elastic contraction of the reinforcing members.

17. An absorbent structure as set forth in claim 4 wherein the reinforcing members have a non-uniform peripheral shape generally corresponding to a peripheral shape of the absorbent member.

18. An absorbent article adapted to be worn by a wearer, the absorbent article comprising a liquid permeable topsheet layer, a backsheet layer and an absorbent structure as set forth in claim 1 disposed between the topsheet layer and the backsheet layer.

19. An absorbent article comprising an absorbent structure as set forth in claim 1 wherein the article is selected from the group consisting of diapers, training pants, adult incontinence garments, feminine napkins

5 including tampons and interlabials, tissues, towels, surgical drapes and gowns, gloves, covers, bed mats, bandages, and wipes.

20. An absorbent structure comprising an absorbent member at least partially made of fibers and a reinforcing member at least partially embedded in the absorbing member for maintaining the structural integrity of the absorbent member, the absorbent member having a first axis extending generally lengthwise of the absorbent member and a second axis perpendicular to said first axis extending generally widthwise of the absorbent member, the reinforcing member comprising a first set of substantially parallel strands, and
5
10 a second set of strands that cross said first set of strands at junctions in a non-orthogonal relationship to define openings in the reinforcing member.

21. An absorbent structure as set forth in claim 20 wherein the second strands are generally parallel to each other.

22. An absorbent structure as set forth in claim 20 wherein the first set of strands extends generally parallel to one of said first and second axes.

23. An absorbent structure as set forth in claim 20 wherein the first set of strands extend generally parallel to the first axis of the absorbent member so that the reinforcing member is stretchable along at least said second
5 axis of said absorbent structure.

24. An absorbent structure as set forth in claim 20 wherein the strands are joined to each other at least at some of the junctions.

25. An absorbent structure as set forth in claim 20 wherein said reinforcing members comprise a third set of strands that cross said first set of strands in a non-orthogonal orientation and also cross said second set of strands.

26. An absorbent structure as set forth in claim 25 wherein the strands in the second set of strands are joined to strands in the third set of strands at least at some junctions where the sets cross.

27. An absorbent structure as set forth in claim 25 wherein the strands of the second set are arranged generally perpendicular to the strands of the third set.

28. An absorbent structure as set forth in claim 20 wherein the reinforcing member is made from a material which is not substantially stretchable.

29. An absorbent structure as set forth in claim 20 wherein the reinforcing member is made from an elastic material.

30. An absorbent structure as set forth in claim 20 further comprising a second reinforcing member at least partially embedded in the absorbent member.

31. An absorbent structure as set forth in claim 20 in combination with an absorbent garment comprising an topsheet layer arranged for engagement with the body of a wearer, and a liquid impermeable backsheet, the absorbent structure being generally disposed between the topsheet layer and backsheet.

32. An absorbent structure comprising an absorbent member at least partially made of fibers and a reinforcing

member at least partially embedded in the absorbent member
for maintaining the structural integrity of the absorbent
5 member, the reinforcing member being connected to the
absorbent member and at least partially gathering the
absorbent member to form rugosities on a surface of the
absorbent member.

33. An absorbent structure as set forth in claim 32
wherein the reinforcing member is elastically stretchable.

34. An absorbent structure as set forth in claim 33
wherein the reinforcing member is relaxed from a stretched
condition in which connection of the reinforcing member to
the absorbent member is made.

35. An absorbent structure as set forth in claim 32
wherein the absorbent member is gathered along a first axis
extending generally lengthwise of the absorbent member and
along a second axis extending generally widthwise of the
5 absorbent member.

36. An absorbent structure as set forth in claim 32
wherein the basis weight of the absorbent member when the
absorbent structure is stretched to remove gathering of the
absorbent member is less than about 1200 grams per square
5 meter.

37. An absorbent structure as set forth in claim 32
wherein the basis weight of the absorbent member when the
absorbent structure is relaxed to gather the absorbent member
is less than about 1600 grams per square meter.

38. An absorbent structure as set forth in claim 32
wherein the reinforcing member is adapted to return
substantially to an original dimension for elongation of the

absorbent structure in a direction up to about 300% of its
5 relaxed length.

39. An absorbent structure as set forth in claim 32
wherein the reinforcing member comprises strands arranged to
cross over one another at junctions to define openings in the
web, the strands being joined to each other at least at some
5 of the junctions.

40. An absorbent structure as set forth in claim 39
wherein the strands are arranged so that said openings are
diamond shaped.

41. An absorbent structure as set forth in claim 32
further comprising a second reinforcing member at least
partially embedded in the absorbent member.

42. An absorbent structure as set forth in claim 32 in
combination with an absorbent garment comprising an topsheet
layer arranged for engagement with the body of a wearer, and
a liquid impermeable backsheet layer, the absorbent structure
5 being disposed between the topsheet layer and backsheet
layer.

43. An absorbent structure as set forth in claim 32
wherein the reinforcing member is elastically stretchable,
and wherein the structure further comprises broken
connections between the fibers and reinforcing member in at
5 least one of a machine direction, a cross direction and a
thickness direction caused by contraction of the reinforcing
member within the structure.

44. A process for forming an absorbent core comprising:
holding an elastomeric reinforcing member in a stretched
configuration;

depositing absorbent material on the reinforcing member
5 in the stretched configuration to form an absorbent member;
and

releasing the reinforcing member from the stretched
configuration so that the absorbent member is at least
partially gathered.

45. A process as set forth in claim 44 wherein holding
the elastomeric reinforcing member in a stretched condition
comprises holding the reinforcing member in a position
selected from the group consisting of stretched in a machine
5 direction, stretched in a cross machine direction, and
stretched in both the machine and cross machine direction.

46. A process as set forth in claim 44 further
comprising attaching the reinforcing member to a forming
surface and stretching the reinforcing member on the
foraminous forming surface.

47. A process as set forth in claim 46 wherein the
reinforcing member is attached to the forming surface with
nubs extending from the forming surface.

48. A process as set forth in claim 47 further
comprising sliding the nubs within slots in the forming
surface to stretch the reinforcing member.

49. A process as set forth in claim 46 wherein the step
of depositing absorbent material comprises fluidizing fibrous
material within a forming chamber and moving the forming
surface within the forming chamber along a path to expose the
5 forming surface to the fluent fibrous material whereby the
fibrous material collects on the forming surface, the step of
conveying the reinforcing member toward the forming surface
comprising conveying the reinforcing member from a

reinforcing member source disposed exteriorly of the forming
10 chamber inward through an opening in the forming chamber and
toward the forming surface.

50. A process as set forth in claim 44 wherein the step
of depositing absorbent material comprises depositing fibers
onto the reinforcing member, at least some of which form
connections with the reinforcing member, and wherein the step
5 of releasing the reinforcing member includes breaking at
least some of the connections between the fibers and the
reinforcing member.

51. An absorbent structure for absorbing liquid, the
absorbent structure comprising an absorbent member at least
partially made of fibers and a reinforcing member at least
partially embedded in the absorbent member for maintaining
5 the structural integrity of the absorbent member, the
reinforcing member having a non-uniform transverse width.

52. An absorbent structure as set forth in claim 51
wherein the reinforcing member has a peripheral shape
generally conforming to a peripheral shape of the absorbent
member.

53. An absorbent structure as set forth in claim 51
wherein the reinforcing member has a first wider portion
embedded in a first wider portion of the absorbent member,
the first portion of the reinforcing member having a
5 transverse width greater than a transverse width of a second
narrower portion of said reinforcing member and embedded in a
second narrower portion of said absorbent member.

54. An absorbent structure as set forth in claim 53
wherein the reinforcing member is stretched in said first
wider portion.

55. An absorbent structure as set forth in claim 54 wherein the reinforcing member is unstretched in said second narrower portion.

56. An absorbent structure as set forth in claim 54 wherein the reinforcing member is plastically deformed by stretching in said first wider portion.

57. An absorbent structure as set forth in claim 53 wherein said second narrower portion comprises a first reinforcing member section and a second reinforcing member section folded against said first reinforcing member section
5 to form said second narrower portion.

58. An absorbent structure as set forth in claim 51 wherein reinforcing member comprise strands arranged in a pattern in which at least some of the strands intersect one another at junctions to define openings in the reinforcing
5 members.

59. An absorbent structure as set forth in claim 51 wherein the reinforcing member has a shape selected from the group consisting of a generally hourglass shape and a generally T-shape.

60. An absorbent structure as set forth in claim 51 wherein the reinforcing member is relaxed from a stretched condition in which connection of the reinforcing member to the absorbent member is made.

61. An absorbent structure as set forth in claim 53 wherein the ratio of the width of said first wider portion of the reinforcing member to the width of said second narrower portion of the reinforcing member is greater than 1.5:1.

62. An absorbent structure as set forth in claim 53 wherein the ratio of the width of said first wider portion of the reinforcing member to the width of said second narrower portion of the reinforcing member is greater than 2:1.

63. An absorbent structure as set forth in claim 51 further comprising a second reinforcing member at least partially embedded in the absorbent member.

64. An absorbent structure as set forth in claim 51 in combination with an absorbent garment comprising an topsheet layer arranged for engagement with the body of a wearer, and a liquid impermeable backsheet layer, the absorbent structure
5 being disposed between the topsheet layer and backsheet layer.

65. An absorbent structure as set forth in claim 64 wherein the absorbent garment includes a crotch region adapted to fit a crotch of the wearer and a waist region adapted to fit at least a portion of a waist of the wearer,
5 the reinforcing member being narrower in the crotch region than in the waist region.

66. A process for forming absorbent cores comprising:
stretching a first portion of a reinforcing member so that the stretched portion has a transverse width wider than a second portion of the reinforcing member; and
5 depositing absorbent material on the reinforcing member to form a first region of the absorbent core embedding the first portion of the reinforcing member therein and a second region of the absorbent core embedding the second portion, the first portion being wider than the second portion.

67. A process as set forth in claim 66 further

comprising intermittently stretching the portion of the reinforcing member while conveying the reinforcing member toward a foraminous forming surface to form multiple wider first portions and multiple narrower second portions, and attaching the reinforcing member to the forming surface in the stretched configuration.

68. A process as set forth in claim 66 further comprising folding sections of the reinforcing member against itself to form said second portion of the reinforcing member.

69. A process as set forth in claim 66 wherein the step of depositing absorbent material comprises fluidizing fibrous material within a forming chamber and moving the forming surface within the forming chamber along a path to expose the forming surface to the fluent fibrous material whereby the fibrous material collects on the forming surface, the step of conveying the reinforcing member toward the forming surface comprising conveying the reinforcing member from a reinforcing member source disposed exteriorly of the forming chamber inward through an opening in the forming chamber and toward the forming surface.